

Phoenix Touch Quickstart Manual 2011.1

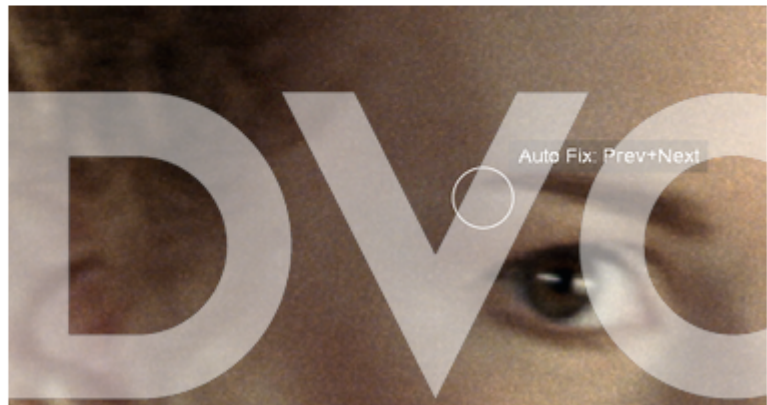
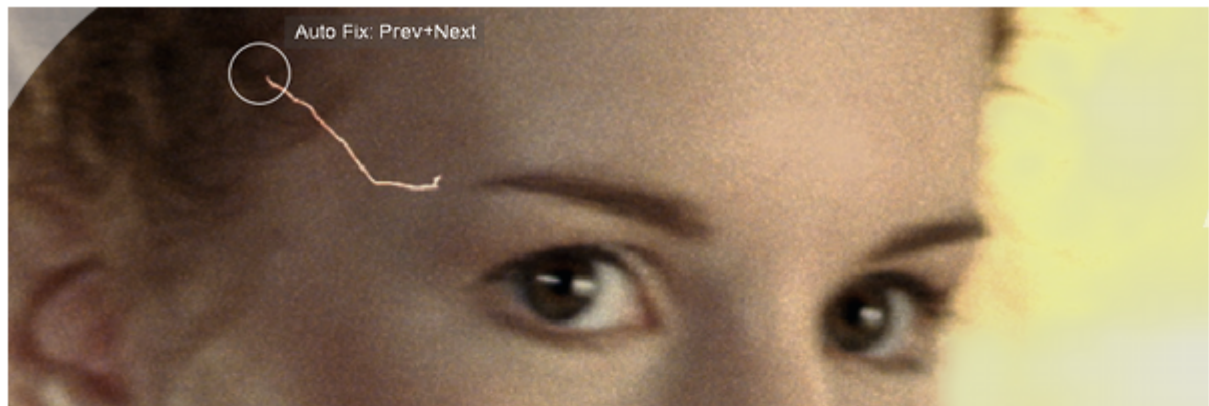


Image Systems 2011 User Manual

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Title :	Image Systems 2011 User Manual
Document Revision :	PTQS-2011.1_0
Software Revision :	2011.1
Date :	15/09/2011

Table of Contents

Welcome	3
Overview	6
Product Support	6
Links and Social	6
Contacts	7
Phoenix Touch Trial	10
Phoenix Touch Trial	10
The User Interface	16
Interface Conventions	16
Main Screens	18
Project Screen	18
Project Desktop	19
Project Library	20
Viewer Tools	22
Comparison Mode	25
DVO Tools	30
DVO Dust	31
Basic Settings and Presets	31
Processing Filters	33
Setup	41
DVO Fix	48
Restoration Tool	52
Appendices	55
Legal Notices	56
Index	0

Welcome

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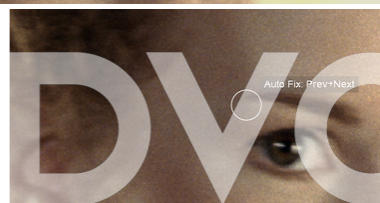
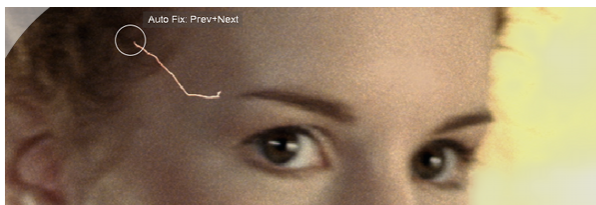


Image Systems 2011 User Manual

Phoenix Touch

Welcome to the Phoenix Restoration Environment from Image Systems!

The Phoenix platform is the perfect solution for film archives and content owners who require the best in content restoration, re-mastering and repurposing. This manual will help you get the most out the system.

Product :	Phoenix Touch
Version :	2011.1
Document Revision :	PTQS-2011.1_0
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Overview

2011.1

Phoenix Touch Trial version – Getting started

This guide will help to get you started with Phoenix Touch using the trial version. Detailed operation is provided in the User Manual that is installed together with the Phoenix Touch software.



- Phoenix Touch

Product Support

Product Support is available to all clients with a valid maintenance contract. To contact support, see the [Contacts](#) section.

User Forum

Image Systems runs a web-based user forum at the following address :

<http://forum.digitalvision.se/>

Please consider joining the forum and taking part in wide-ranging discussions with our growing community of users.

Links and Social

Facebook

<http://www.facebook.com/groups.php?ref=sb#/group.php?gid=2439525958>

YouTube

<http://uk.youtube.com/user/151Wardour>

Twitter

https://twitter.com/dv_alerts

Web Site

<http://www.imagesystems.tv>

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Phoenix Touch Trial

2011.1

Phoenix Touch Trial

Getting started

This guide will help to get you started with Phoenix Touch using the trial version. Detailed operation is provided in the User Manual that is installed together with the Phoenix Touch software.

About Phoenix Touch

Phoenix Touch from Image Systems is restoration software for automatic and/or manual removal of dust, dirt and blemishes. Phoenix Touch is part of a product line including:

- Phoenix Finish, the complete restoration, re purposing and re-mastering production solution, focused on getting the best from your archive.
- Phoenix Refine, offers the best in image restoration and enhancement tools to transform media ready for mastering.

DVO (Digital Vision Options) is the core technology behind Phoenix. With over 20 years of research and development the DVO software tools have become one of the most revered tool sets in the post production industry. Known for presenting the best image manipulation tools for restoration, enhancement and format conversion, they are only available on the Nucoda and Phoenix platforms.

About Phoenix Touch Trial

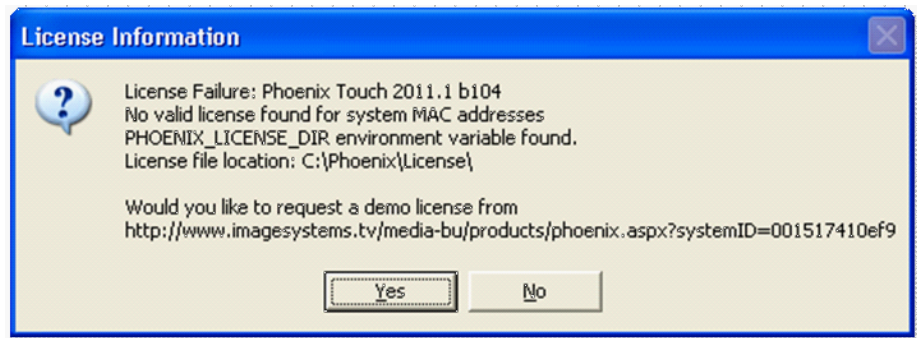
The Phoenix Touch trial version is a special installer, including pre-built project and associated media. A 30 day trial license is provided, with full functionality. When the trial license expires a full license can be acquired through Image Systems' sales channels.

System requirements

- Operating System: Windows 7 Pro, 64 bit
- Memory: Min. 4 GB of RAM
- Free disk space: Min. 1.5 GB
- Disk speed: Min. 200 MB/s for real-time HD playback
- Graphics card: NVIDIA with 512 MB RAM (Quadro 4000 or better recommended)
- Internet connection
- Web browser

Installing

After downloading the Phoenix Touch trial installer, start the installer. When installation is done, launch Phoenix Touch trial in order to start the licensing procedure. A license dialogue will appear stating that there is no valid license. Click on the “Yes” button to go to the web page where a license can be obtained from Image Systems.



License dialogue

The MAC address of the system has already been provided and the company information needs to be filled in. Submit the information and a 30 day license will be provided by e-mail within 24 hours (weekdays only).

License

When receiving the license by email copy the attached license.flic file into c:\Phoenix\License\ (or wherever the installation directory has been placed) replacing the current file. If for some reason the file attachment has been blocked, copy the license string included in the body of the email (e.g PHOENIX TOUCH 2011.01 0324D6A8FFF8 13-Aug-2011 30 D145FAC5DEE337281972) into c:\Phoenix\License\license.flic using notepad.

Opening a project

Launch the Phoenix Touch trial version using the Phoenix Touch icon on the desktop. Once the application has started you will notice a project called “Touch Demo” at the top of the screen.

The Phoenix Touch trial version comes prepared with a trial project and test media, courtesy of ITV. Select the project and click on the Open Project button, in the bottom right corner of the screen.

Operation

In Phoenix Touch, automated (DVO Dust) and manual (DVO Fix) dust-busting is combined into a single powerful tool. This allows for quick access to the Fix tool, allowing manual repairs of larger stains. A reveal mode in the Fix tool will allow parts of the image that was incorrectly processed, to be restored at any time.

Applying the combined DVO Dust+Fix

In the trial project, the media has already been spliced to the timeline. To apply the combined DVO Dust + Fix tool, use your mouse or pen, to drag the orange bar (clicking in the time code display ribbon, until it is over the clip in the timeline.

Pressing the F1 key will switch you from the Library view to the image viewer, where you should see the material as you move the play head. Once over the material, you add the tool to the material by clicking on the Restoration Tool icon, at the bottom of the screen.

The bottom menu is switchable, so, if you can't see the icon, please click on this icon <insert pic> in order to switch the views]



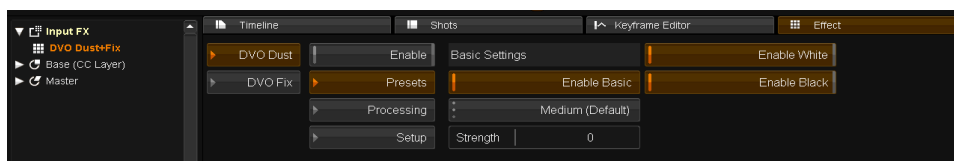
Restoration tool button

Automatic dust-busting

Manual “Dust busting” is hugely time consuming and expensive. Because DVO Dust works automatically and intelligently, it can turn in excellent results around ten times faster than a manual operator - without the artifacts some algorithms leave behind.

Using automated dust-busting not only means that you will save time, but you will reduce the risk of missing smaller artifacts during the manual dust-busting pass.

DVO Dust provides detailed controls to optimize the result, however, using one of the four available presets will be effective in most cases. The presets corresponds to the size and frequency of the dust/blemishes to remove.



DVO Dust presets

First ensure that the Effects tab is selected, then that default preset "Medium" (below the Enable Basic button) is used and finally ensure that the DVO Dust Enable control is on.

The automatic dust-busting will start immediately as background rendering is enabled. This can easily be verified (selecting the Timeline tab) as the render bar at the top of the timeline will go green instead of red.

Manual dust-busting

DVO Fix allows you to quickly select and automatically repairs minor and major imperfections associated with degraded film, such as blotches, staining and physical damage.

Using a brush or shape tool for selection, DVO Fix automatically fills in with motion and grain-compensated imagery for seamless results, greatly improving both image quality and speed of operation over traditional methods of copying and re-positioning content from adjacent frames.

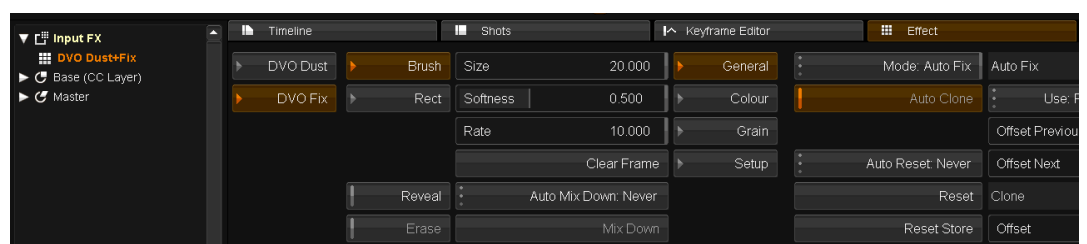
There is a choice of rectangular or circular brushes, and both can be used in a "drawing" or "Clicking" fashion, ie, instead of dragging a rectangle or drawing over a blemish, use the tool more like a stamp, by just positioning it over the blemish and clicking once. Use the 1 and 2 keys to switch easily between brushes.

In the General tab, you will note that we have a choice between Auto Fix, Clone and Auto Clone. Experiment with the different modes to see the results. Use the offset button to change the clone source. Use the Offset Previous and Offset Next feature to set frames for the automated fix tool.

The arrow keys on your numeric keypad can be used to shift the cloned image around, to position it within the image. Using the Reveal option, the original image will be revealed if you paint over a previously fixed area.

Using the F6 key will bring up a view that will allow you to

Simply select the Effects tab and then click on the Fix button. Now the manual paint tool is active.



DVO Fix

As you paint, the artifacts are replaced with motion compensated imagery true

to the original content.

To move frame by frame, use the left and right arrow keys on your keyboard.

The User Interface

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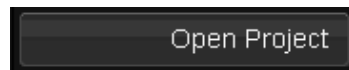
This chapter will give you an overview of the user interface and some basic components of the application.

Interface Conventions

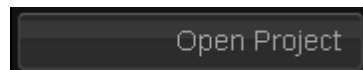
The following interface conventions are used for various elements.

Functional

A function button performs a single action only.



Active and available function button.



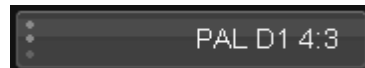
Inactive function button. If a button is not available for selection, it is greyed out.

Secondary Windows



The two dots preceding the button name indicate that a new window or dialog will open when pressed.

Drop-down Menus



The three vertical dots preceding the button name indicate that this button is a drop-down selection list.

Numeric Sliders / Data Entry

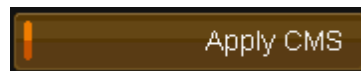


Click, hold and drag the mouse left and right in the data field to increment and decrement the data value. You can also click the mouse once in the data field to select, then type in a data value.

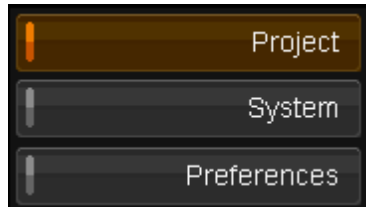
Toggle Buttons



Toggle button off.



Toggle button on.



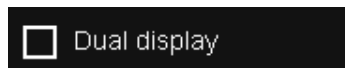
A group of three toggle buttons, with one enabled.

Radio Buttons

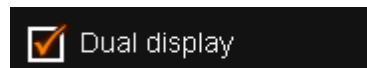


A group of two radio buttons. In a group, only one option can be selected at one time.

Option Buttons



Option button off.



Option button on.

Information Dialogs



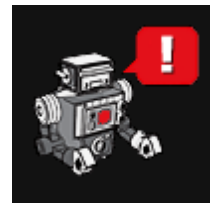
Informational

Informational messages, no user interaction required.



Query

Request for user input.



Warning/Error

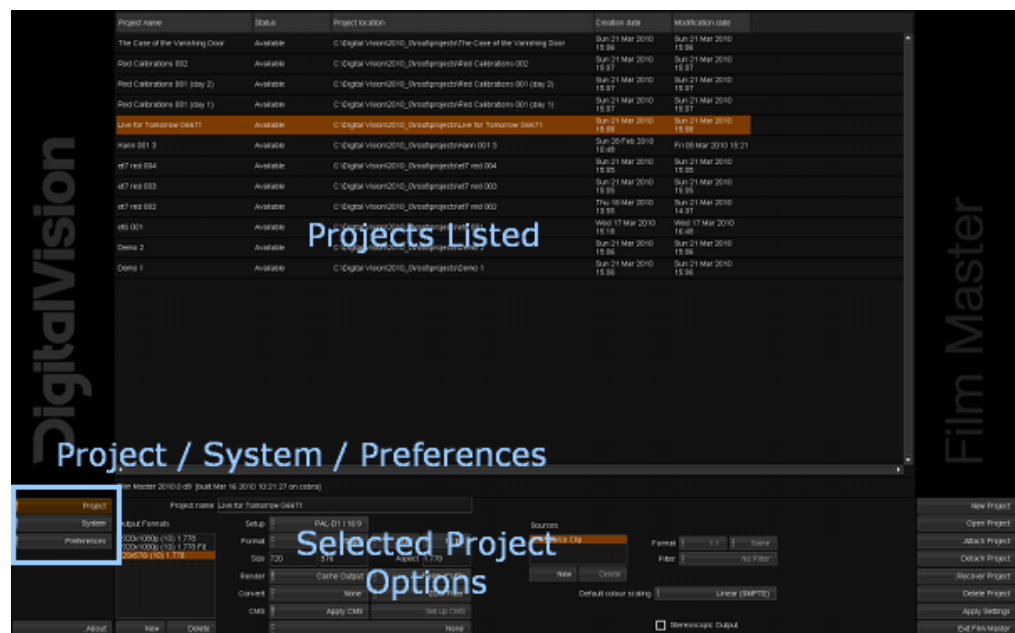
Warning or error alert. Sometimes including a request for user intervention.

Main Screens

The application environment is composed of a number of components within which you do the majority of your work. These include the main [Project Screen](#), the [Project Desktop](#) and the [Project Library](#).

Project Screen

The *Project Screen* is the first screen visible when we launch the application. This is where we create and manage our projects and access our global preferences.

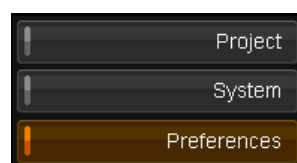


Main Project Screen



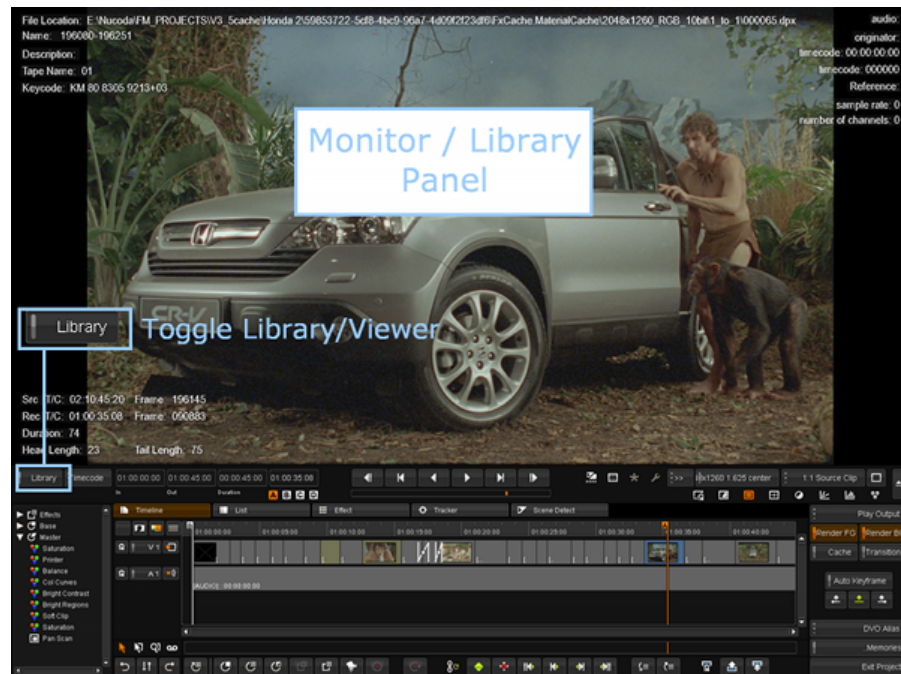
The active component screen will be high-lighted *orange*.

To access the component, press the corresponding button on the main screen :



Project Desktop

The *Project Desktop* is the main working environment inside your project.



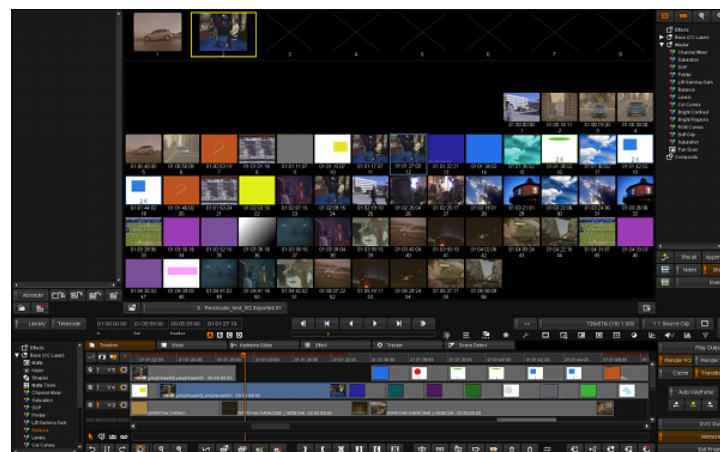
The Project Desktop showing the viewer area and the composition timeline below.

The desktop is composed of three main views :

- The *Monitor* - in dual monitor mode, this will be displayed on your second monitor
- The *Composition Timeline* and GUI controls
- The *Memories* view - for notes, memories and grouped shots



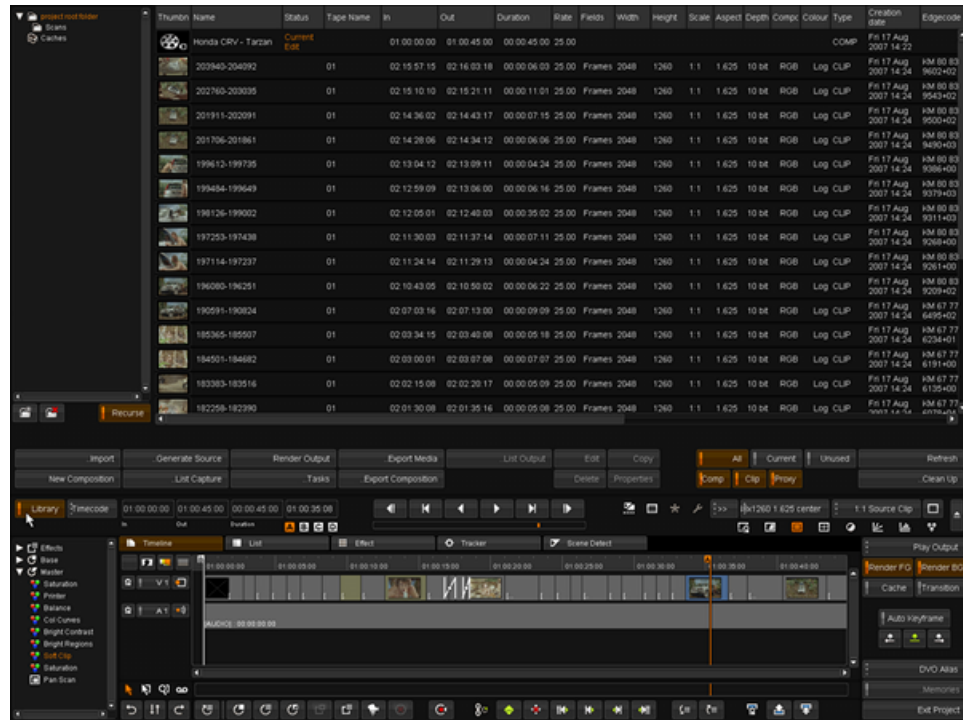
In *single-screen* mode, the *Monitor* panel can display the *Monitor*, the *Library* or the *Memories* panel.



Project Desktop showing *Memories* view

Project Library

The *Project Library* is where we import and export media, create compositions and manage our project assets.

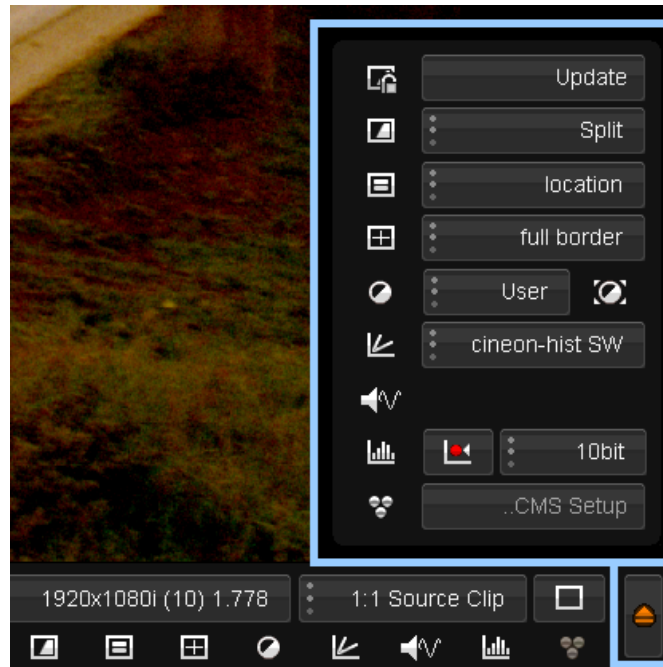


Viewer Tools

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The *viewer tools menu* is opened from the project desktop by :

- Pressing the **F12** hot key or
- Clicking the up-arrow button on the bottom-right of the viewer panel as shown below.



viewer toolbox menu

The viewer tools pop-up menu contains setup for the following functions:

- compare mode
- head-up display (HUD)
- grids
- masks
- graphs
- histogram
- colour management system (cms)

These functions can be turned on/off from within the menu pop-up window, or from the corresponding icons on the desktop once the settings for each function have been selected via the pop-up menu.

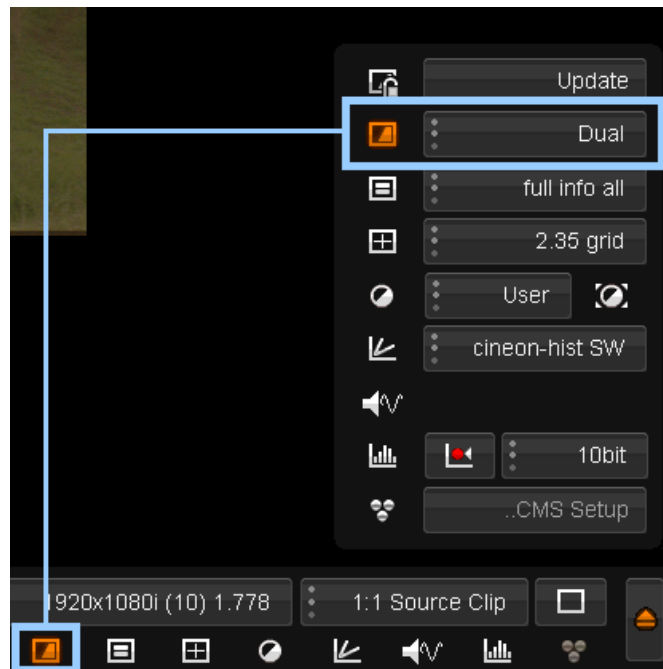
Tool Configuration

The available options are *user configurable* for the following tools :

- HUD
- Grids
- Masks
- Graphs

Comparison Mode

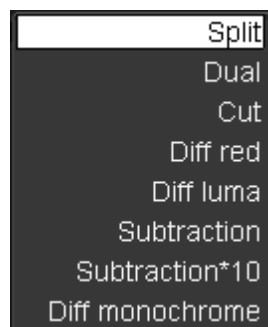
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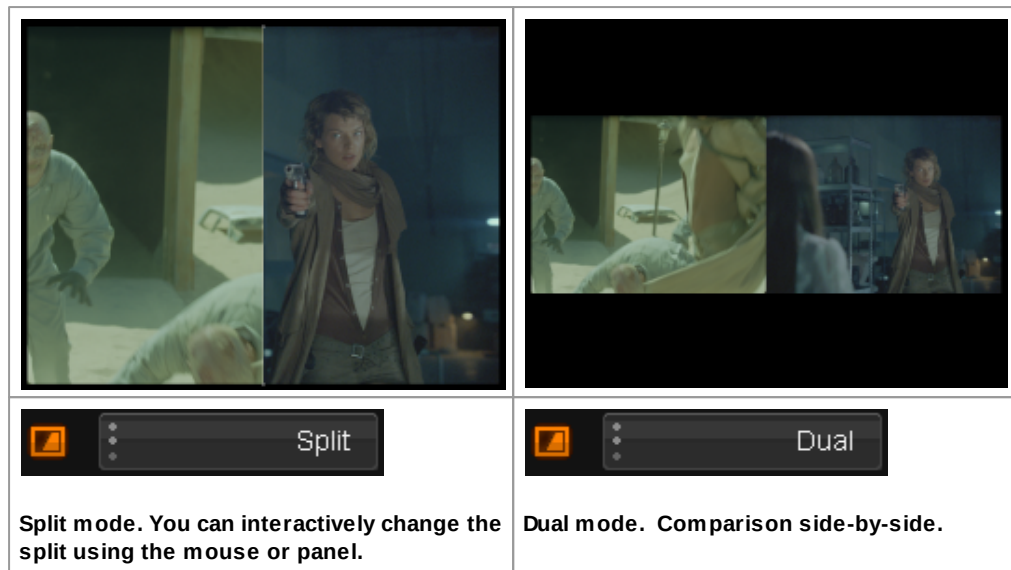
Hot key : **F6**

The *compare* function allows you to compare the frame you are viewing against other instances in your timeline, against a reference frame, or against different versions of the frame itself.

Compare Modes



The *Compare* options are selected via the drop-down list on the right-hand menu. Show this menu using the **F12** hot key. The options listed inside a project may be a *subset* of the total available because you may want to limit those you can cycle through. The options available in this list is configured in the Control Panel preference section.



Split

Selecting split mode will allow you to wipe between the currently active frame in the viewer and your [comparison image](#).

An *overlay control* will appear in the viewer, separating the two frames. This control can then be manipulated interactively by dragging it in any arbitrary direction, to make comparisons between the two images. It is also possible adjust the overlay during playback.

Dual

Selecting dual mode will display **two** images in the viewer. The currently active frame will appear on the left, and next to it on the right will be your choice of [comparison image](#).

Cut

Selecting the cut mode will allow you to toggle between the current frame and your [comparison image](#) in full size. Only one image will be displayed at a time, determined by pressing the compare button on/off. When the compare button is *off* you will see the current frame, as normal, and when the compare button is *on* you will see the comparison image.



A full screen compare can be achieved by taking a *snapshot* of the current image and moving to a new frame for comparison. Press **CTRL + 5** to grab the current image. Holding down the **5** key at any future time will display the *snapshot* frame in place of the current image in the monitor.

Difference Modes

There are 3 *difference* modes:

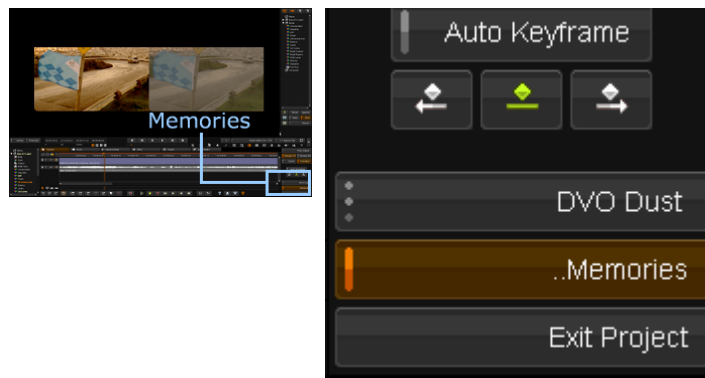
- Diff red
- Diff luma
- Diff monochrome

Each one will show you the difference between the current frame and the comparison frame in the specified colour.

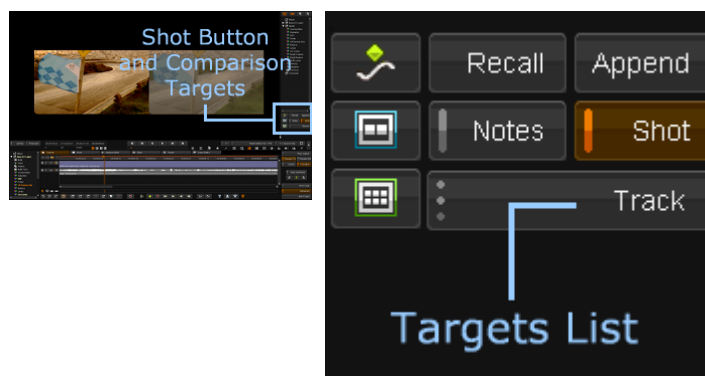
Comparison Image

Once you have selected your compare mode, you can close the viewer tools menu (F12) and bring up the *Memories* screen to select what we will compare against.

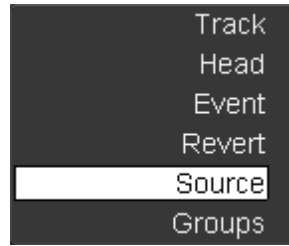
Select the **..Memories** button :



Select the **Shot** button :



Choose a *Comparison Target* from the drop-down list below *Shot* :



You can compare against targets :

- **Track** - the track below
- **Head** - the secondary play-head
- **Event** - a selected event
- **Revert** - the previous grade on the shot
- **Source** - the segment source
- **Groups** - a selected group member

DVO Tools

2011.1

DVO stands for *Digital Vision Optics*, our collection of image processing tools running in software on generic computer platforms. DVO effects are optimised to make use of the latest multithreading, CPU and GPU computer technology.

With the DVO toolset Image Systems brings twenty years of experience in developing high performance image processing algorithms to the world of data-centric restoration, digital intermediate and commercial work.

DVO Effects can be added to a segment on the timeline in the same way as any other effect. They are automatically activated once applied.

This section describes each effect and its parameters.

- [DVO Dust](#)
- [DVO Fix](#)
- [Restoration Tool](#)



Every DVO tool processes its input according to the specified colour format and it is **essential** to set the *colour format* of the input material correctly (the default will be taken from the project setting). This can be changed *independently* inside each DVO effect. If the input colour format is set incorrectly the material may not be processed properly.



For a discussion of colour scaling modes, see the *Setup Manual*.

DVO Dust

DVO Dust is a fully automatic and highly accurate film dirt, dust and random scratch concealment and video drop-out removal system. It can remove around 90% of visible imperfections without introducing unwelcome artifacts.

DVO Dust utilises a pioneering set of processing algorithms and new filters with the Image Systems Emmy award-winning PHAME motion compensation technology. With manual "dust busting" being very time consuming and expensive, the automation in *DVO Dust* can typically reduce the amount of operator time required by an order of magnitude. This saves enormous amounts of time and money without any compromise in terms of picture quality.

This effect has three groups of parameters:



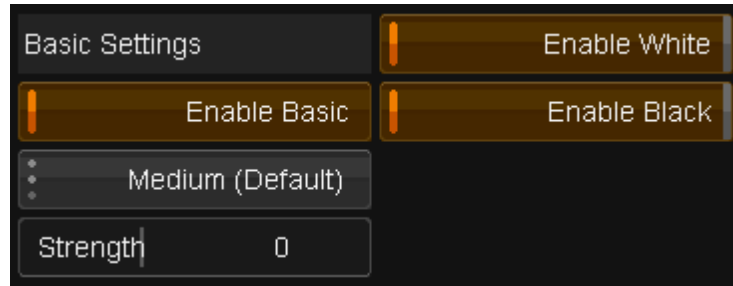
The **Enable** toggle button allows the complete effect to be turned on or off.

- [Presets](#) - preset selections for quick dirt removal
- [Processing](#) - specific processing options
- [Setup](#) - additional settings for various processing selections

Basic Settings and Presets



The *DVO Dust* effect provides a number of *presets*, ranging from *Extra Light* to *Extra Heavy* removal. These work as a very good starting point before moving on to the more advanced controls in the [Processing](#) and [Setup](#) tabs. You may not need to use any of the advanced parameters.



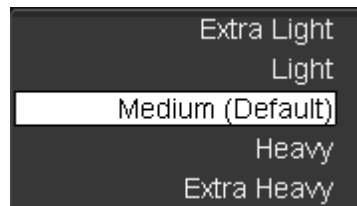
Enable Basic

The **Enable Basic** toggle button allows you to enable/disable *basic* mode. This mode uses presets to automate and hide much of the effect complexity.



When you edit any of the settings in the processing or setup tabs the basic mode becomes automatically *disabled*. Similarly, when you select a mode from the basic modes, all settings will be automatically adjusted to fit the selected mode and basic mode will be automatically enabled.

Presets



This is a collection of preset settings (e.g. Extra Light, Heavy etc.) that setup the effect for a predefined level of dust/dirt.

Values : Extra Light, Light, Medium, Heavy, Extra Heavy

Default : Medium

Strength

This slider allows the adjustment of the strength of dust reduction processing to use. It is only available in *basic mode*.

Range : -5 to +5

Default : 0

Enable White / Enable Black

White/black dirt removal is enabled via the corresponding *Enable White/Enable Black* toggle buttons.

- *Enable Black* - for black/dark spots
- *Enable White* - for white/light spots

Both can also be enabled at the same time.

Default : On

These options also appear in the *Processing* tab and they are linked (changing one location affects the other).



Note that if **neither** button is enabled then *DVO Dust* will **not filter at all!**

Processing Filters



The filters used by the process are very important in determining the final processed quality. *DVO Dust* includes a variety of filter algorithms that can effectively process a wide range of input footage.



Drop-down *Filter* list

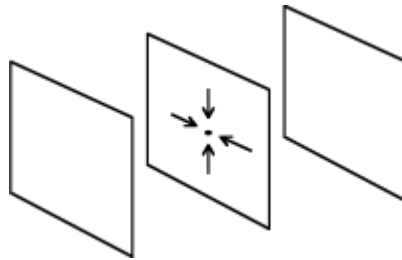
Spatial / Temporal / Mixed Filters

Values : Spatial, Mixed 1, Mixed 2, Mixed 3, Mixed 4, Temporal 1, Temporal 2, Copy Prev, Copy Next, Bypass

Default : Mixed 3

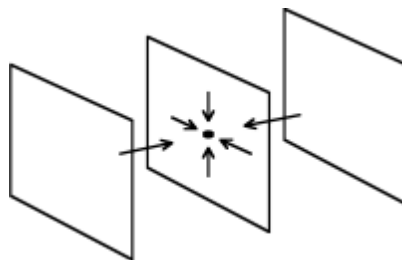
The following generic filter groups are defined.

Spatial



All filters named *Spatial* are filters that work only within the current frame (or field if the material is interlaced), i.e. it has taps only in the current frame. These filters are intended for very small spots.

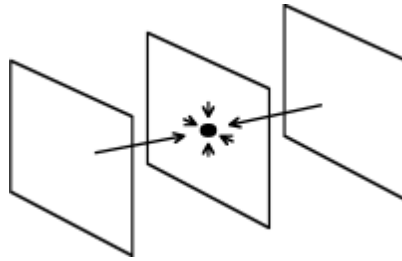
Mixed



All filters named *Mixed* have taps in both the current frame and the frame previous to and following the current frame. That is, it has both spatial and temporal taps. All these filters however have more taps in the current frame than in the previous and following frames together (more spatial taps than temporal). These filters are intended for normal spots.

The different *Mixed* types (Mixed 1,2,3 etc.) change the ratio between spatial and temporal. The **larger** the number, the more *temporal* filtering.

Temporal

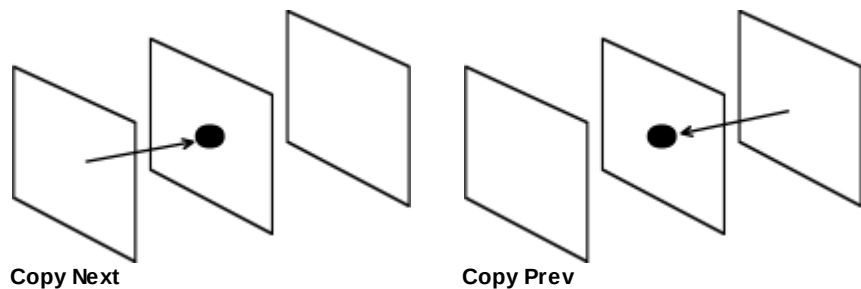


Filters named *Temporal* have both spatial and temporal taps but with more temporal than spatial. This will enable the *DVO Dust* to remove any size of spots. These filters may need more careful use, to not give unwanted artefacts.



The filter called '**Temporal 2**' is a special temporal filter that uses **minimum** amount of information from the current frame. This means that the processed signal will not vary as much as the normal temporal filter in terms of luminance/intensity.

Copy



The '*Copy Next*' and '*Copy Prev*' filters should be used for one frame in combination with a *key* area and *Global* mode to replace a big chunk of dirt, a big hole, or a flash frame with information from the next or previous frame.

Bypass

Setting the filter to *Bypass* will leave dirt **unprocessed**.

Use Adaptive Size

When the **Use Adaptive Size** button is enabled, the filter size automatically adjusts during processing according to the size of the dirt found.

Default : On

Filter Size

This sets the size of the filter on the current frame, so it is only required for spatial and temporal filters.

Use the numeric slider to define the filter size when adaptive filter sizing is not enabled. The larger the size of the dirt the larger this value should be.

Range : 0 to 15

Default : 7

Adaptation



The **Adaptation** toggle button allows you to turn the *adaptation* processing on/off.

When this button is **off**, *DVO Dust* works in **global** mode, filtering the whole image with the same fixed filter selected in the *Filter* menu.



Note that if the **Adaptation** button is **off** then none of the adaptation controls above will have an effect.

Motion

This numeric slider configures the degree of *motion sensitivity*.

Initially you can set it to 0 (most safety), for maximum motion sensitivity, and then increase it in steps if there isn't enough filtering in moving parts of the picture.

A value of 256 corresponds to no motion adaptation at all, which means that temporal filtering can be applied fully to moving parts of the image.

Range : 0 to 256

Default : 30

MDC

The **MDC** (*Motion Detection Current*) toggle button determines whether to look at just the previous and next field/frame, or to look at all of the previous,

current, and next field/frame.

Default : On

Having this option *on* ensures higher sensitivity and reduces artefacts down to a minimum.

For maximum filtering, the control may be set to *off*.



MDC filter configuration is done inside the *Setup* section.

Edge

This controls material edge *protection*.

Edge protection acts as a safety measure and reduces the possibility of false scratch detection. Some material may require this protection e.g. houses at a distance, a forest or material with a slight weave. By turning edge protection *on*, the built in *edge detector* will affect were DVO Dust filters and it will reduce filtering where it finds edges.

Default : On



Edge protection should normally be left on.

Further controls for defining [thresholds for edges](#) are available in the setup tab.



Edge parameter configuration is done inside the *Setup* section.

Temporal Adaptation

Temporal Adaptation acts to exclude falsely detected dust/dirt from being processed. It does this by comparing dirt detected on the current frame with dirt detected on the previous frame (within a sizable window).

This toggle button turns temporal adaptation on/off.

Default : Off

The [temporal adaptation settings](#) can be found in the *Setup* tab.

Black / White

There are two separate and independent parameter groups controlling the processing for Black (dark) and White (light) areas of dust/dirt.

Enable Black / Enable White

White/black dirt removal can be enabled via the corresponding toggle button.

- *Enable Black* - to remove black/dark spots
- *Enable White* - to remove white/light spots

Both can also be enabled at the same time.

Default : On



Note that if **neither** button is enabled then *DVO Dust* will **not filter at all!**

Use Adaptive

If on, sets white/black contrast to be *adaptive*.

Default : On

This will result in the algorithm determining which contrast setting is needed on a pixel-by-pixel basis.

When enabled the contrast controls change to give more, or less, effect of the adaptive contrast.

Adptv Threshold

Only applicable if *Use Adaptive* is **on**.

Range : -32 to 31

Default : 0

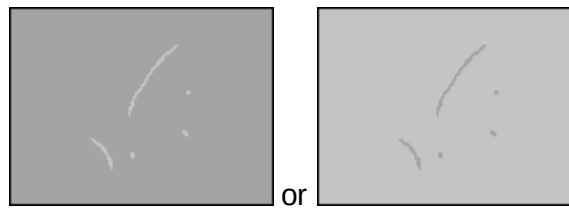
Fixed Threshold

Only applicable if *Use Adaptive* is **off**.

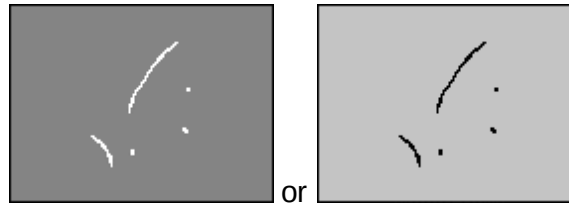
Range : 0 to 63

Default : 30

You should lower the thresholds if you have very low contrast white spots on light background, or black spots on dark background, and increase the thresholds if the luminance difference between the spots and the background is less:



set the contrast threshold to a *low* value



set the contrast threshold to a *high* value

Contrast Adaptation Limits



The contrast adaptation *low* and *high* limit controls only work in the adaptive mode and are used to specify the range of contrast settings that the adaptation is allowed to work in.

The upper limit is normally set to the non-adaptive contrast setting you normally use. If both limits are set to the same value the result is exactly the same as when using non-adaptive contrast.

Low

Range : 0 to 63

Default : 5

High

Range : 0 to 63

Default : 30

Other Settings



Signal

This selects the signal (channel) within which scratches/dirt will be detected.

Values : Y,U,V,R,G,B,Y+U+V

Default : Y

The adaptation works on **one channel only**, normally 'Y'. By setting the signal to 'R', for example, when only red scratches are visible, the *DVO Dust* will more precisely detect the dirt, minimizing the risk of affecting actual picture content.

Motion Estimation

This drop-down button allows you to choose the motion estimation.

Values : off, normal, best

Default : normal

When enabled, the motion estimation module gives a performance boost, both in dirt detection and concealment. This means that much more aggressive settings can be used without introducing smearing.

Scene Change

This drop-down button gives options for how to process the frames surrounding an edit/cut point:

- **Inside** - processes the frame before a cut using only the current and previous frame, and processes the frame after a cut using only the current and next frame. Stays inside the shot.
- **Across** - ignores cuts, use the previous, current, and next frame. Goes across shots.
- **Bypass** - doesn't process the frames before or after a cut.

Values : Inside, Across, Bypass

Default : inside

Channels

This control is for selecting the channels from which dirt will be removed.

Normally the processing should be set to all channels, but in some cases, especially with small dirt, better results can be achieved by processing only one or two of the channels.

Values : Any combination of R,G and B.

Default : R,G,B

Setup



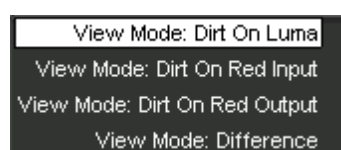
View



Turning on the **View** toggle button will provide an overlay/preview showing detected dirt. The type of overlay can be selected via the **View Mode** drop-down list:

Default : Off

View Mode



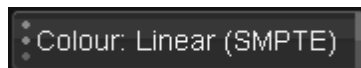
Values : Dirt On Luma, Dirt On Red Input, Dirt On Red Output, Difference

Default : Dirt On Luma

Where :

- **Dirt On Luma** - The detected scratches/dirt are high-lighted on a *monochrome* input picture with lowered luminance.
- **Dirt On Red Input** - The detected scratches/dirt are shown with *red* on the **unprocessed** input signal.
- **Dirt On Red Output** - The detected scratches/dirt are shown with *red* on the **processed** output signal.
- **Difference** - The *difference* between the unprocessed input and the processed output is displayed.

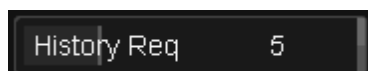
Colour



The drop-down list will default to the project setting for the input format. You need to set this control according to the material that you are working with. If the footage was shot with a *video* camera, select a **linear** format. If this control is not set correctly the material may not be processed properly.

Default : From Project

History Required



The *DVO Dust* effect is *recursive*.



Recursive means the result for any given frame depends on the result of the previous frame(s).

For best results a certain amount of frame **history** needs to be built up, and this numeric slider is used to specify how many frames of history to use.

Range : 0 to 15

Default : 5 frames

Use Handles



The **Use Handles** button controls whether the history includes available

handles of a scene/shot. Normally, the history frames accumulated will terminate on a shot edit/event (start/end edit). There may be extra frames available (*handles*) before or after the start and end edit points of a shot however and these will be included as history if **Use Handles** is set.



If handles exist, full and precise processing will be available from the first frame of a clip.

Default : On

The remaining controls on the *Setup* page are used to optimize the processing further. These controls should only be used by experienced operators with a good understanding of the dirt and scratch concealment process.

Max Filter



Enable

In addition to the [filter](#) selected in the *Processing* tab, a separate *max filter* can be enabled.

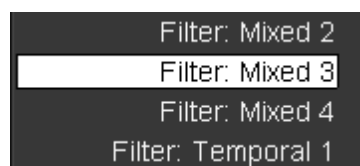
The *Max Filter* will only be used when **Use Adaptive** is *enabled* in the *Processing* tab.



This is very useful when you have material with mostly small dirt and the occasional bigger stains.

Default : Off

Filter



Use this drop-down button to select the max filter with which to process **large stains**.

Values : Spatial, Mixed 1, Mixed 2, Mixed 3, Mixed 4, Temporal 1, Temporal 2, Copy Prev, Copy Next, Bypass

Default : Temporal 1

When the *Max Filter* is enabled, the normal filter used for the adaptive filter sizing will take care of the **small** dirt. When the upper size limit is reached it will automatically switch over to the filter selected here.



The filter used here would typically be a larger temporal filter.

The *Max Filter* can also be set to *Bypass*, which will leave big stains unprocessed. These can be processed later by a de-blotcher or 3rd party software.

Size

This specifies the size of the *spatial* part of the filter (for *spatial* and *mixed* filter types).

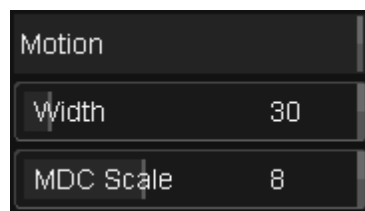


Use a large value when processing large bits of dirt.

Range : 0 to 15

Default : 3

Motion



Width

Motion **Width** is used in combination with the [Motion control](#) in the processing section and defines the motion *adaptation* behaviour. When motion width is set to 0, the motion setting will be used as a threshold discriminating between moving and non-moving parts. When motion width is set to a non-zero value, the classification will change gradually from “no motion” to “full motion”. Motion width then specifies the size of the transition region.

Range : 0 to 255

Default : 30

MDC Scale

The **MDC** (*Motion Detection Current*) toggle button in the Processing section determines whether to look at just the previous and next field/frame, or to look at all of the previous, *current*, and next field/frame.



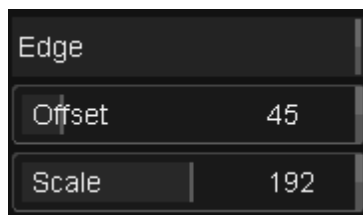
Only used if [MDC \(Motion Detection Current\) control](#) enabled in the *Processing* section.

The *higher* the scale setting, the *more* filtering (less impact of the MDC algorithm).

Range : 0 to 15

Default : 8

Edge



The Edge settings apply only if [Edge protection](#) has been enabled in the *Processing* tab.

Offset

The edge offset acts like a threshold, determining how well-defined edges have to be before the edge control has any effect. The smaller the offset value the sooner the edge control will have an effect.

Range : 0 to 255

Default : 45

Scale

Edge scale sets the sensitivity of the edge control. The higher the setting the more pronounced the effect of the edge control.

Range : 0 to 255

Default : 192

Temporal



Temporal	
Strength	80
Trim Size	5



The temporal settings apply only if [Temporal Adaptation](#) has been enabled in the *Processing* tab.

The purpose of *temporal* adaptation is to **exclude** falsely detected dirt from processing by comparing it with the previous frame's detected dirt within a sizable window.

Strength

The strength level determines the amount of influence that the previous frame's detected dirt will have on exclusion of dirt detection in the current frame. A higher value will result in more dirt being excluded and less processing carried out.

Range : 0 to 255

Default : 80

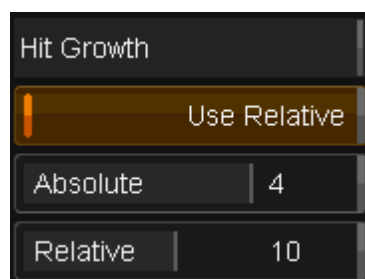
Trim Size

The trim size corresponds to a "window" in the previous frame which is searched for dirt to compare against the current frame. The smaller the window (trim size) the more filtering that will be achieved.

Range : 0 to 7

Default : 5

Hit Growth



Hit Growth	
☒ Use Relative	
Absolute	4
Relative	10

The *Hit Growth* control is useful when the dirt in the image does not have very well-defined edges.

By increasing the hit growth the processor is told that the dirt is bigger than it actually appears. The result is that the soft edges also are processed.

Mode

Absolute

Use Relative button **off**.

The hit mask for all sizes of scratches are grown by the same amount as specified with the strength control

Range : 0 to 4

Default : 4

Relative

Use Relative button **on (default)**

In relative mode large scratches cause a larger growth.

Range : 0 to 15

Default : 10

The *Absolute* and *Relative* sliders control the amount of hit mask growth for each mode. The higher the value, the larger the area around the scratch that will be processed.

DVO Fix

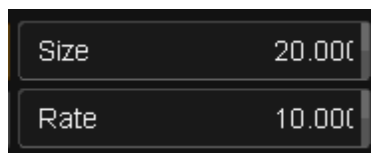


DVO Fix facilitates the repair of specific areas and imperfections in a single frame, such as scratches, hairs and blotches.

Using a brush or shape tool to select the damage, *DVO Fix* automatically repairs the selected area by comparing it to adjacent frames and applying motion compensation to recreate missing detail plus grain compensation to blend-in the recreated information.

DVO Fix is not enabled by default. It is only enabled once an area to fix has been selected via the *Brush* or the *Rectangle* tool.

Brush Menu



The brush tool appears in the viewer as an oval shape. Use this tool to fix an area by either clicking or clicking *and dragging* the brush.

Size

The size tool allows you to resize the brush in order to fix smaller/larger areas.

You can also resize the brush by holding down the SHIFT key (on either the keyboard or control panel), the left mouse button and dragging. The brush size will

Range : 0.1 to 5000

Default : 20 pixels

Rate

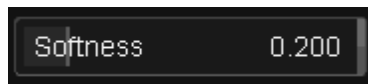
The rate tool applies to when you drag the brush, affecting how many brush 'stamps' are performed during the dragging motion.

Range : 2 to 1000

Default : 10

Rect Menu

The rectangle tool displays a cross-hair in the viewer, allowing you to draw a rectangle around the area that you want to fix. As soon as the rectangle has been drawn the DVO Fix effect will start processing.



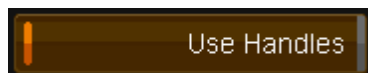
Softness

The softness setting applies to the border outside of the rectangle and allows you to adjust how the outline blends into the surrounding area. This numeric slider takes values between 0-1.

Range : 0 to 1

Default : 0.2

Common Menu



The **Use Handles** button controls whether the tool uses *source handles* when rebuilding the frame. This is important at scene boundaries (edits) because the tool rebuilds using frames before and after the current frame.

Default : On

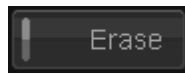
If this button is on, and we are at a scene boundary (start or end of shot), if we have handles we will use them as part of the rebuilding process.

If there are no handles, or this button is off, no before (or after) frames will (or can) be used at the scene start (or end), and this impacts the *DVO Fix* result.



Note that a *scene detected* timeline can have **no shot handles**, so **Use Handles** should be turned **off**.

Erase



The *Erase* button becomes enabled as soon as a fix is made to the current layer.

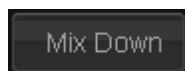
Default : Off

Turning on the *Erase* button will turn the brush into an **eraser** and applying this to the fixed area of your image will 'undo' previous fixes.



You cannot erase changes to a *mixed-down* layer.

Mixdown



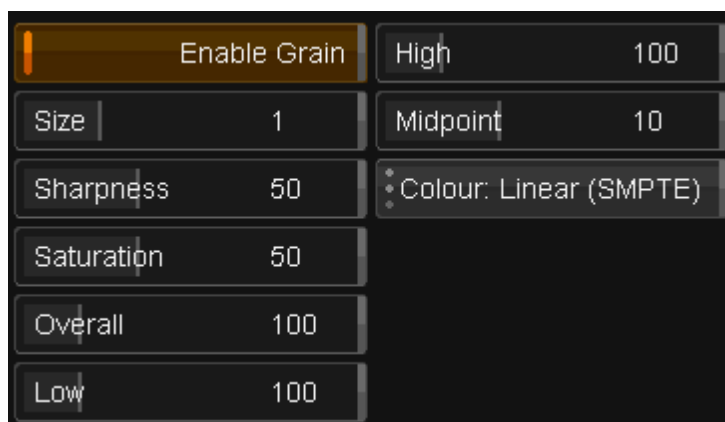
The *Mix Down* button becomes enabled as soon as a fix is made to the current layer.

Pressing *Mix Down* will make the changes to the current layer permanent, "burning" them into the image.



This tool allows you to apply fixes with different settings to the same area.

Enable Grain



Enable Grain will turn on the *grain compensation*. This adds grain to the 'fixed' area as appropriate, blending the changes into the scene.

Default : Off



The parameters are the same as for the DVO Regrain effect.

Colour

The drop-down list will default to the project setting for the input format. You need to set this control according to the material that you are working with. If the footage was shot with a *video* camera, select a **linear** format. If this control is not set correctly the material may not be processed properly.`

Default : From Project

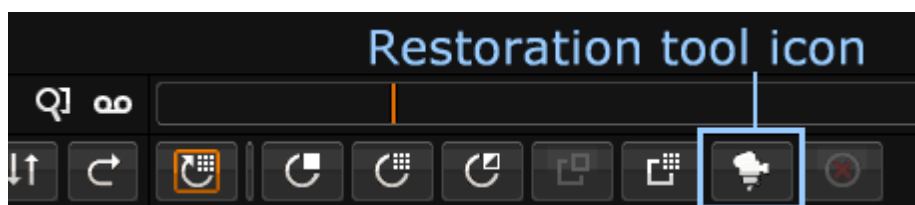
Restoration Tool

The *Restoration Tool* is a combined effect, placing both a [DVO Dust](#) and a [DVO Fix](#) effect on a shot simultaneously. These two effects are often used together.

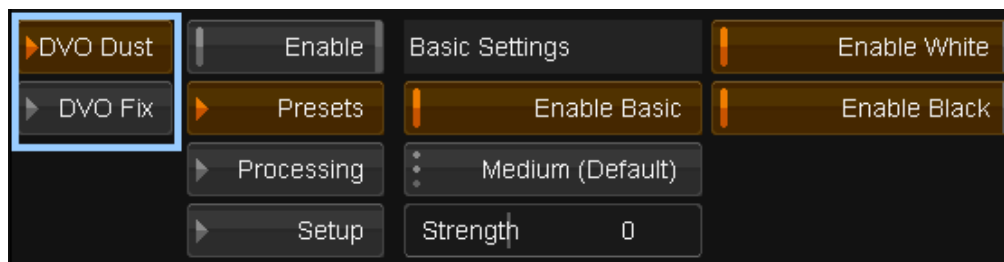
Used in this mode, an extra function *Reveal* is available inside *DVO Fix*.

Adding a Restoration Effect

Add a *Restoration* effect by clicking the restoration **icon** on the *effects toolbar* at the bottom of the main screen.



Added as a single effect in the *Effects* layer, both [DVO Dust](#) and [DVO Fix](#) are available in the same effect.



The Reveal Function



In restoration mode, the *DVO Fix* tool has the added function *Reveal* which is not available in the standalone *DVO Fix* effect.

The *Reveal* function enables you to see the results of the *DVO Fix* **before** the *DVO Dust* effect takes place.

Size / Rate

The *Size* and *Rate* parameters are for the *Reveal* brush, as described in the *DVO Fix Brush* section.

Blend

The *Blend* parameter controls the mix between before and after the application of the *Dust* effect. The larger the value, the less mix.



This facilitates the correction of any 'false positives' (incorrect fixes) carried out by the *Dust* tool.

Range : 0.0 to 1.0

Default : 1.0 (no mix)

Appendices

2011.1

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Freetype	http://www.freetype.org	[17]
FTGL	http://ftgl.wiki.sourceforge.net	[3]
libtiff	http://www.libtiff.org	[4]
libjpeg	http://www.iijg.org/files/README	[5]
winpcap	http://www.winpcap.org/	[6]
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[5] libjpeg

See : <http://www.ijg.org/files/README>

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[6] winpcap

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[8] Mesa

Mesa 3-D graphics library
Version: 7.0

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[17] Freetype

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